

CLAIMS:

- 1 An electrophoretic display panel,
comprising:
- an electrophoretic medium comprising charged particles;
- a plurality of picture elements;
5 - electrodes associated with each picture element for receiving a potential difference,
the charged particles being able to occupy extreme positions near the electrodes and
intermediate positions in between the electrodes; the extreme positions being associated with
extreme optical states; and
- drive means,
10 the drive means being arranged for providing, within an image transition period, the image
transition period comprising one or more portions, to each of the plurality of picture elements
- a grey scale potential difference, during a grey-scale driving portion of the image transition
period, for causing the particles to occupy the position corresponding to image information,
wherein
15 the drive means are arranged for providing, during said one or more portions of the image
transition period, different starting times for the application of the potential differences,
within said one or more portions of the image transition period, for potential differences
having a duration less than a maximum duration for said portion of the image transition
period.
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2. An electrophoretic display panel according to claim 1 wherein the drive means
are arranged such that the starting times differ for the application of the potential differences
of substantially equal, less than maximum, duration.
- 25 3. An electrophoretic display panel according to claim 1 or 2 wherein the drive
means are arranged for providing different starting times for application of the grey scale
potential difference within the grey scale driving portion of the transition period for grey
scale potential differences having an application duration less than the maximum duration for
the grey scale driving portion.

4. An electrophoretic display panel according to claim 1 or 2 wherein the drive means are arranged for providing, within a reset portion of the image transition period, said reset portion preceding the grey scale driving portion, to each of the plurality of picture
5 elements
a reset potential difference for causing the particles to substantially occupy an extreme position before application of the grey scale potential difference,
wherein the drive means are arranged for providing different starting times for application of the reset potential difference within the reset portion of the image transition
10 period for transitions in which the duration of the application of the reset potential difference is less than the maximum duration for the reset portion.
5. An electrophoretic display panel as claimed in claim 1 or 2, characterized in that the drive means are arranged such that the starting times differ in dependence only on a
15 starting optical state before application of the potential difference and a final optical state after application of the potential difference.
6. An electrophoretic display panel as claimed in claim 5 and 3, characterized in that the drive means are arranged such that the starting times of application of reset potential
20 differences differ in dependence only on a starting optical state before application of the reset potential difference and an extreme optical state after reset.
7. An electrophoretic display panel as claimed in claim 5 and 2, characterized in that the drive means are arranged such that the starting times of application of grey scale
25 potential differences differ in dependence only on a starting optical state before application of the grey scale potential difference and a final optical state after said application.
8. An electrophoretic display panel as claimed in claim 5 and 3, characterized in that the drive means are arranged such that the starting times differ in dependence on a
30 starting optical state, an extreme optical state after reset, and a final optical state.
9. An electrophoretic display panel as claimed in claim 5, characterized in that the drive means are arranged for applying an over-reset potential difference, an over-reset

potential difference being a reset potential difference applied for a duration substantially longer than needed to bring a picture element to an extreme optical state.

10. An electrophoretic display panel as claimed in claim 1, 2 or 3, characterized in
5 that the drive means are arranged for providing to each picture element a preset potential difference prior a application of a reset and/or a grey scale potential difference, a preset potential difference being constituted of a series of short pulses.
11. A method for driving an electrophoretic display device in which method reset
10 and grey scale potential differences are applied to an array of picture elements of the display device within an image transition period for providing a change of image on the display device wherein within an image transition period, the image transition period comprising one or more portions, to each of the plurality of picture elements a grey scale potential difference is provided during a grey-scale driving portion of the image transition time period, for
15 causing the particles to occupy the position corresponding to image information, wherein during said one or more portions of the image transition period, different starting times are provided for the application of the potential differences, within said one or more portions of the image transition period, for potential differences having a duration less than a maximum duration for said portion of the image transition period.
- 20 12. A method for driving an electrophoretic display device as claimed in claim 11 wherein the starting times differ for the application of the potential differences of substantially equal, less than maximum, duration.
- 25 13. A method for driving an electrophoretic display device as claimed in claim 11 or 12 wherein grey scale potential differences are applied within the grey scale portion of the image transition period, wherein different starting times for application of the grey scale potential difference within the grey scale driving portion of the transition period for grey scale potential differences having an application duration less than the maximum duration for
30 the grey scale driving portion.
14. A method for driving an electrophoretic display device as claimed in claim 11 or 12 wherein a reset potential difference for causing the particles to substantially occupy an extreme position before application of the grey scale potential difference is provided within a

reset portion of the image transition period preceding the grey scale driving portion of the image transition period

wherein different starting times are provided for application of the reset potential difference within the reset portion of the image transition period for transitions in
5 which the duration of the application of the reset potential difference is less than the maximum duration for the reset portion.

15. Driving means for an electrophoretic display panel as claimed in any of the claims 1 to 10.